Standard Language	TPEs	TPE Connections to the math standards
8.1 Teaching Aligned with State Standards[1] The credential program's coursework and supervised field experiences include the study of effective means of teaching mathematics to young children, consistent with the State Board adopted K-3 Mathematics Standards and Framework and the *Preschool Learning Foundations* and *Curriculum Framework*. Coursework and supervised field experiences prepare teachers to model mathematical thinking, inquiry, practice, and processes in their classrooms and to engage in mathematics teaching and learning in a mutually respectful manner with students.	**TPE 2.4** **TPE 2.5** **TPE 3.2** **TPE 8.1** **TPE 8.4**	**2.4** …modeling and using respectful language to communicate and encourage positive student-to-student and student-to-teacher interactions **2.5** …foster a caring community where each child is treated fairly and respectfully by adults and peers **3.2** Use subject-specific pedagogy in accordance with state frameworks within and across the core curriculum, including a focus on language, literacy, and mathematics. **8.1** Plan and implement mathematics instruction … that is grounded in an understanding of California's Mathematics Standards and Framework and the Preschool Learning Foundations and Curriculum Framework. **8.4** Consistent with California's Standards for Mathematical Practice, develop children's abilities according to their individual developmental levels, linguistic, cognitive, social and emotional strengths and learning needs

[1] These section headers are for organizational purposes only and are not part of the Commission-approved standard

8.2 Building on children's prior knowledge Coursework and supervised field experiences prepare candidates to draw on and extend children's prior mathematical knowledge, understandings, and capabilities. The program prepares candidates to build positive relationships with children that help candidates understand children's mathematical understandings and provide appropriate learning activities and experiences that build on children's developing mathematical capabilities. The program prepares candidates to use their knowledge of individual children to meet them where they are developmentally and provide the support needed to sustain their progress.	**TPE 2.2** **TPE 2.4** **TPE 3.2** **TPE 3.4** **TPE 4.1** **TPE 4.8** **TPE 8.1** **TPE 8.3** **TPE 8.5**	**2.2.** Create a positive classroom climate by building rapport and a caring relationship with children and showing respect for children's perspectives, identities, and home languages **2.4** …modeling and using respectful language to communicate and encourage positive student-to-student and student-to-teacher interactions **3.2** Provide developmentally appropriate emergent mathematics-focused learning opportunities as well as play activities, cross-disciplinary activities **3.4** Set individualized goals and objectives for content learning and make appropriate instructional adaptations to promote access to the core curriculum for all children. **4.1** Plan activities and lessons, that build on what children know, accommodate children's developmental needs and learning preferences **4.8** Apply information about children's current levels of development, content- specific learning needs, [and] assessment data **8.1** Plan and implement mathematics instruction appropriate to children's age, grade, and developmental levels **8.3** Provide a secure environment for children to take intellectual risks, foster positive attitudes toward mathematics and encourage student curiosity, academic discourse, and persistence in solving mathematical problems. **8.5** Differentiate and provide developmentally appropriate instruction and tasks to meet individual children's learning needs and engage children in self-initiated as well as teacher-led learning activities, including play-based activities, that use manipulatives and other tools to solve problems.

Standard Language	TPEs	TPE Connections to the math standards
8.3 Building Conceptual Understanding and Foundational Mathematics Skills Through coursework and supervised field experiences programs stress the goal of building children's conceptual understanding so that children develop a strong foundation for later math learning. Candidates learn to engage children in activities that encourage students to use a range of tools and strategies to solve problems, including working in pairs or small groups. The program teaches candidates to relate mathematics to children's interests and everyday life and embed math learning opportunities in daily activities. Candidates learn how to differentiate instruction and learning activities to meet individual children's learning needs.	**TPE 1.4** **TPE 1.6** **TPE 8.5** **TPE 8.7**	**1.4** Connect learning to real-life contexts **1.6** … adjust instruction as needed to provide access to the full range of the curriculum for all children. **8.5** Differentiate and provide developmentally appropriate instruction and tasks to meet individual children's learning needs **8.7** Support respectful child-to-child interactions as students engage with their classmates to figure out ways to solve problems and explain or show how they arrived at their solution
8.4 Building on children's Mathematical Thinking and Problem-solving Candidates learn to provide learning activities and opportunities for children to figure out different ways to solve problems on their own or with classmates, and to explain or show how they arrived at their solution to the problem. Programs emphasize the importance of observing, listening, and reflecting on children's mathematical thinking and discourse and asking questions, posing new learning activities and opportunities and providing a variety of tools to further surface and build on children's mathematical thinking. Candidates learn to ask children questions to elicit children's thinking and problem-solving processes as they engage in math activities.	**TPE 1.7** **TPE 3.2** **TPE 8.6**	**1.7** Promote children's thinking … through developmentally appropriate activities that provide opportunities for children to engage in … problem-solving **3.2** Provide developmentally appropriate emergent mathematics-focused learning opportunities as well as play activities, cross-disciplinary activities … that require mathematical reasoning **8.6** Observe and interpret children's strategies in solving problems and ask thought-provoking questions that lead to deeper understanding (e.g., analysis, synthesis, evaluation).

PK-3 Mathematics Standard 8 and TPE Map

Standard Language	TPEs	TPE Connections to the math standards
8.5 Teaching all the PK-3 critical Mathematical Strands Coursework and supervised field experiences prepare teachers to facilitate children's learning in all of the critical strands of mathematics in the areas of 1) number and operations, including counting and cardinality, 2) mathematical thinking and understanding relationships, 3) algebra and functions, 4) measurement and data analysis, and 5) geometry. For all strands and across all grade levels PK-3 (Appendix D), the program provides teachers with effective ways to both engage children in *thinking* about mathematics while they *do* mathematics, and help children develop confidence in their mathematical skills. The program assists teachers to learn to help children develop increasingly complex mathematical understandings and skills consistent with the progression of the mathematics strands identified in the K-3 Mathematics Standards and Framework and the *Preschool Learning Foundations* and *Curriculum Framework*.	**TPE 3.2** **TPE 8.2**	**3.2** Use subject-specific pedagogy in accordance with state frameworks within and across the core curriculum, including a focus on language, literacy, and mathematics… **8.2.** Provide learning opportunities, consistent with Universal Design for Learning principles, for children to develop knowledge related to 1) number and operations, including counting and cardinality, 2) mathematical thinking and understanding relationships, 3) algebra and functions, 4) measurement and data analysis, and 5) geometry, as described in the California's Mathematics Standards and the Preschool Learning Foundations.

Standard Language	TPEs	TPE Connections to the math standards
8.6 Promoting Children's and Candidates use of Multiple Modes of Communication to Support All Learners Through coursework and supervised field experiences, candidates learn that deep mathematical thinking and learning occurs and is supported through promoting multiple modes of communication about mathematics, including language, gestures, movement, use of a variety of tools, writing, art, and other modalities, thereby allowing all children, including English learners and children with disabilities, opportunities to express their mathematical development in meaningful and comprehensible ways.	**TPE 1.7** **TPE 3.5** **TPE 8.8**	**1.7** opportunities for children to engage in effective expression… **3.5** Promote core curriculum knowledge in all children, including mono- and multi-lingual children, children with disabilities and children with other learning needs, by adapting the curriculum and providing explicit instruction of vocabulary and academic language. **8.8** Support all children to develop the academic language of mathematics, ensuring access for all children to the content of mathematics appropriate to grade level expectations and encourage parents/guardians to use the home language to talk about mathematics (especially numbers, arithmetic, spatial relations, and patterns)…